

FIELD INSPECTION REPORT FOR THE DEEP CREEK RIVER DISTRIBUTION SYSTEM

Prepared by Gertrudys Adkins
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1. JULIUS PARK

A 4-ft parshall flume was inspected and was found to be level in both directions, longitudinally and transversely. The staff gage was properly set at the reference point and the entrance and exit conditions were good. The flow registered by the flume was 18.3 cfs while the amount measured was computed to be 18.56 cfs.

Recommendation: None, the flume is working as expected.

2. LOGGERS CABIN

There is a 4-ft cutthroat flume and USGS gaging station with a Sutron Data Logger at this site. This is where the Deep Creek system starts. The commissioner uses the flow records from this flume to determine what comes into the creek from what he releases and measures at the Julius Park Reservoir (Mosby water). This flume is out of level (approximately 1 inch from front to back). The section is calibrated by the USGS and there is a shift recorded in the data. The channel appears to be very stable. Current meter readings were not taken at this site.

Recommendation: None

3. ARBEN WILKERSON DIVERSION OUT OF EAST MOSBY CREEK

Creek water enters a screened structure and then flows into a concrete box that serves as the inlet to a 6-inch pipe. There is no measuring device or control structure at this diversion. The flows were measured at 0.054 cfs (24 gpm).

Recommendation: A measuring device and control structure should be installed at this diversion point. Possibly a V-notch or rectangular weir would work in this situation. The intake pipe is generally not flowing full. Therefore, a meter in the pipe is not recommended unless a venturi type meter is installed in which a section of the pipe is reduced to force the water to fill the pipe at all times.

4. RAYMOND MURRAY (UTE TRIBE)

The 2-ft parshall flume at this diversion is working properly and is level in both directions.

Recommendation: None.

5. RAYMOND MURRAY - MILL CANYON INSTREAM FLUME

There is a 4-ft flume in the creek channel at this location. The flume is out of level from side to side by about 0.5 inches and slopes downstream. Overgrown vegetation and debris were observed in the flume channel. Water was turbulent at the flume entrance and flowing too fast. Water was measured at 17.34 cfs.

Recommendation: The channel upstream from the flume needs to be cleaned up. A stilling basin above the flume is needed to reduce the approach velocity and create a more uniform section. In addition the flume should be reset.

6. ARBEN WILKERSON & ERVIN YOUNG

The control structure is in good shape and performing well. There is a one foot parshall flume at this diversion. The flume is sloping downstream about 3 inches over its length. The water commissioner tries to compensate for the slope by placing a board in the floor of the flume throat. Which in essence raises the floor of the flume. The accuracy of his method is questionable because the flume is designed to certain specifications. Raising the floor of the flume by modifying the sill heights may cause a significant change in the rating table computations.

Recommendation: The flume should be raised to accurately record the flows.

7. ERVIN YOUNG

Flume and control structure is in good shape and working properly.

Recommendation: None.

8. GALE ELDRIDGE

The control structure is working well. There is a 1-ft flume below the diversion that is out of level. Water was not being diverted at the time of the inspection. However, a small amount of water was leaking underneath the flume. There was vegetation in the channel which will probably affect the flow and velocity profile.

Recommendation: The flume needs to be reset and the channel cleaned up.

9. WAYNE JENSEN

There is a 1-ft flume at this location. The flume is level and working properly with good approach flow conditions. The control structure above the flume is in good shape. There was no water been diverted at the time of the inspection.

Recommendation: None.

10. LANCE LUCK DIVERSION

There is a 1-ft parshall flume in this diversion that is level and working properly. There is a good hydraulic jump at the exit of the flume. Also, water is flowing uniformly into the flume. The diversion structure (wheel head gate) is in good condition.

Recommendation: None.

11. DONNOHO INSTREAM FLUME

A 4-ft cutthroat flume is in the river channel to measure water inflows from Mosby Creek before it joins Deep Creek at Martin Upper Diversion. The flume is sloping downstream by about 1.2 inches.

Recommendation: It is important that this flume be accurate in recording the flows. The commissioner relies on it to distribute the water, hence, it needs to be reset in the channel.

12. MARTIN HUBER UPPER DIVERSION (CONFLUENCE OF CREEKS)

A calibrated section of the river is used to measure the combined flows of Deep Creek and Mosby Creek. Martin Huber has a pipeline inlet at this point and measures the water by using a propeller meter. The meter is working well and was registering a flow of 450 gpm.

It is unsafe for the commissioner to cross the structure to check the meter because there is only a wooden board laid across the river. The commissioner indicated that is difficult for him to use this measuring section to determine how much water comes from each source. He would like to see a flume installed upstream in Deep Creek before it meets Mosby Creek.

Recommendation: A walkway should be installed at this diversion point. It is recommended that a flume be installed upstream in Deep Creek before it joins the Mosby Creek.

13. AARON SIMMONS

This diversion has a 1-ft parshall flume that is out of level 6 to 7 inches across the flume's length. Also, the location of the flume is not easily accessible

by the commissioner. He has to cross the creek at a point where it is not safe to do so. The diversion head gate is in good condition.

Recommendation: The flume needs to be reset and a walkway installed in the river for the commissioner to safely perform the duties of regulating and measuring the water in the system.

14. JUSTICE, PARISH AND COOK SHARED DIVERSION

This diversion diverts water into a pipeline that discharges into a small pond. This pond is used as a sedimentation structure for a sprinkler system. At the outlet of the pond there is a constant head orifice turnout. The constant head orifice structure consists of two gate controlled openings with stilling wells. The downstream staff gage could not be read because the stilling well where the staff gage is located was covered and locked. We were not able to determine the accuracy of this device. Also, discharge tables were not available.

The commissioner contends that the measuring device is not working properly because the upstream staff gage does not change to reflect the higher flows into the pipeline, as sprinkler systems go online.

What may be happening in this diversion is that the constant water level head differential that is required to properly measure the water based on the downstream gate opening is not being maintained. It is likely that the downstream gage is fully open. Therefore, letting more water be diverted as the pressure in the sprinkler system increases.

It was difficult to find a place to measure the amount of water diverted. The pond outlet discharges into a short entrance channel leading to the constant head orifice turnout structure at a 90-degree angle. The water was measured at the channel entrance in what looks like an 8-ft rectangular control section that overflows into a screened concrete box. There was 2.4 cfs passing through this structure. Part of the measured flow discharges back to the river. The excess water (1 cfs) was subtracted from the total flow to determine the flow in the pipe.

Recommendation: A key should be provided to the commissioner to open the box and evaluate the situation. Also, a

gaging table and pertinent calibration and measurement information of the orifice should also be provided. The commissioner should meet with Ms. Justice, so she can explain the situation and show him how this measuring device operates. If the current structure is not adequate for the commissioner to measure and regulate the flows, then it is recommended that a measuring device be installed immediately below the main diversion headgate and above the pond.

15. CEMETERY FLUME (INSTREAM)

The in-stream 4-ft flume is marginal. The flume is off level and sloping downstream approximately 2 inches. The flume is used as a reference by the commissioner to determine what is flowing in the creek below the cemetery. This flume is not critical for the commissioner in distributing the water in the system. The commissioner indicated that he will fix this flume and make it level. The flows were measured at 6.19 cfs while the discharge table indicated a flow of 5.39 cfs.

Recommendation: The flume should be reset. Since the commissioner indicated that he will fix this flume, I will be in contact to determine its status before the beginning of next year's irrigation season.

16. ELMER EGIN #1

There is a 9-inch parshall flume at this location followed by a pipe inlet. At the time of the inspection there was no water being diverted. However, it was observed that the floor of the flume was much lower than the pipe intake and causes submergence. The commissioner indicated that during his entire tenure at the job he has never diverted water at this point because the water rights are for excess or high water flows.

Recommendation: If water is to be diverted here the flume needs to be moved to a better location downstream from the current site.

17. ELMER EKIN #2

A 9-inch flume was found to be submerged. The downstream channel was silted in causing the water to back up. The flume did not have a staff gage.

Recommendation: To correct the problem of submergence, the downstream channel needs to be cleaned up. If the flume is still submerged after the channel is fixed then it is recommended that the flume be raised or moved to a better location. Also, the upstream channel needs to be straightened for the flow to be more uniformly distributed before it enters the flume. The flume should be equipped with a staff gage.

18. DAVID MURRAY #1

There was no measuring device installed at this diversion. A flume was observed laying close to the channel and is supposed to be installed soon.

Recommendation: A measuring device should be installed at this diversion.

19. ELMER EKIN #3

A 9-inch flume was found to be sloping upstream by 0.5 inches. No water was being diverted at the time of the inspection. There was no staff gage in the flume. The commissioner indicated that he will install a staff gage at this diversion and offset it to account for the slope.

Recommendation: The flume should be fixed and equipped with a staff gage.

20. DAVID MURRAY #2

This is a very small diversion in the lower part of Deep Creek. There was no measuring device in place.

Recommendation: A measuring device should be installed at this diversion point. A 90° V-notch weir may be sufficient to accurately measure the flows.

21. GLEN BASCOM

Glen Bascom has two diversion headgates. At the time of the inspection there was water diverted in head gate #1, but not in headgate #2. The flows in head gate #1 discharge into a concrete box which split the flows into two ditches. The flows from headgate #2 seem to also discharge into this box. There is a flume in the ditch leading from headgate #2. However, there was no measuring device in headgate #1 diversion. A sump pump was observed on the ditch bank that showed signs of being used in the past. Also, a small hose was in the creek drawing water to irrigate trees in his yard.

Recommendation: The diverted water from all sources needs to be measured. Therefore, a measuring device should be installed at each diversion.

22. KEN HUBER/ESPLIN

This diversion has an 18 inch flume that is working properly. The head gate is in good condition. This diversion has a water rights of less than one cfs, hence the size of the flume is quite large for the allowed flows.

Recommendation: None.

23. MARVIN HUBER

Marvin Huber has a series of diversion turnouts in the creek above Martin Huber diversion flume which do not have measuring devices or control structures.

We counted nine diversions in total along the reach of the creek at the downstream end of the system. He is mainly in a rotation basis with Martin Huber and the total flow diverted in all of his diversions can be calculated by taking the flows readings in his 3-ft flume at the top of the ditch and deducting the amount from the flows readings at the Martin Huber flume at the bottom of the system. A 3-ft flume was inspected and found to be submerged, but level in both directions. The flows were measured at 3.57 cfs while the discharge table indicated a flow of 3.8 cfs. The commissioner indicated that at flow levels above 3 cfs the flume tends to be submerged.

Recommendation: The flume needs to be raised to accurately measure the flows at all flow ranges.

24. ELROY WALKER

There is a pump station with a McCrometer meter in a pipeline about 100 ft downstream of the pump housing. The meter did not seem to be working. There is a small pond downstream from the meter.

Recommendation: The meter should be inspected regularly and functioning at all times for it to record the correct amount of water diverted during the season.

25. MARTIN HUBER

An 18 inch parshall flume was inspected and found to be level in both directions. However, the flume is submerged and needs to be moved upstream. There is a check dam downstream from the flume that is causing the water to back up. We met Mr. Martin at the site and spoke to him about the situation and what needs to be done to get accurate water measurements. He agreed to move the flume to a better location upstream from the location where it is now. The water diverted was measured to be flowing at 3.04 cfs. This flume and diversion point is at the end of the distribution system.

Recommendation: The flume needs to be moved to an upstream location where the water can flow freely out of the flume without submergence or influence from the check dam.

General Note: There were 57 digital pictures taken of the measuring devices and diversion structures during the inspection tour. Location points of diversions using a GPS unit were also recorded whenever possible.